S-TSR-Z-00002

TECHNICAL SAFETY REQUIREMENTS
SAVANNAH RIVER SITE

SALTSTONE FACILITY

Revision 1

August 2003

Westinghouse Savannah River Company
Aiken, SC 29808

SAFETY • RESPONSIBILITY • SECURITY
SRS
SAVANNAH RIVER SITE

PREPARED FOR THE U.S. DEPARTMENT OF ENERGY UNDER CONTRACT NO. DE-AC09-96SR18500

DISCLAIMER

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List of Acronyms, Abbreviations, and Symbols

AC	Administrative Control
CFR	Code of Federal Regulations
DOE	Department of Energy
DSA	Documented Safety Analysis
FOSC	Facility Operating Safety Committee
LCO	Limiting Condition for Operation
LCS	Limiting Control Setting
QA	Quality Assurance
SDF	Saltstone Disposal Facility
SL	Safety Limit
SPF	Saltstone Production Facility
SR	Surveillance Requirement
TSRs	Technical Safety Requirements
USQ	Unreviewed Safety Question
WAC	Waste Acceptance Criteria
WSRC	Westinghouse Savannah River Company

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0A	April 2003
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Section 1

Use and Application

1.0 USE AND APPLICATION

1.1 Introduction and Scope

1.1.1 Technical Safety Requirement Applicability

This document describes Technical Safety Requirements (TSRs) for the Saltstone Facility (Z-Area). This FACILITY was designed and built to convert SALT SOLUTION into a nonhazardous low-level solid waste called saltstone. The FACILITY primarily treats low-activity wastewater generated by the Effluent Treatment Facility, the Low Curie Salt Process, and the Actinide Removal Process. These low-activity wastewater streams are stored in Tank 50H until they are pumped to the FACILITY for treatment and disposal. Wastewater from other sources may also be transferred to Tank 50H for processing as long as the waste transferred to the FACILITY meets the requirements of the FACILITY Waste Acceptance Criteria (WAC). The FACILITY, located northeast of the Defense Waste Processing Facility Vitrification Plant (S-Area), consists of two facility segments: the Saltstone Production Facility (SPF), which produces saltstone grout; and the Saltstone Disposal Facility (SDF), which consists of vaults used for final disposal of the saltstone grout. The SPF and SDF are part of the Waste Solidification Project Facilities. Saltstone grout is classified by the South Carolina Department of Health and Environmental Control as a nonhazardous industrial waste.

The Saltstone Facility is a Hazard Category 3 Nonreactor Nuclear Facility as defined by DOE-STD-1027-92, and the TSRs are required to maintain the Hazard Category 3 status.

1.1.2 Methodology

This TSR document was prepared in accordance with guidance contained in Title 10 Code of Federal Regulations (CFR) Part 830, Nuclear Safety Management, Subpart B, Section 830.205, Technical Safety Requirements and Department of Energy (DOE) Implementation Guide DOE G423.1-1. The TSR derivation methodology, criteria, and conclusions are contained in Chapter 5 of the Saltstone Facility DSA. As documented in Chapter 5 of the Saltstone FACILITY DSA, there were no safety class or safety significant structures, systems or components identified for the Saltstone Facility. The only TSR controls required are Administrative Controls.

1.0 USE AND APPLICATION

1.2 Definitions

---------- **NOTE** ----------
Terms in this list appear in ALL-CAPITALIZED type throughout this TSR.

Term	Definition
FACILITY	All processes and necessary support equipment defined by the Saltstone Facility DSA that are used to treat and dispose of low activity waste.
SALT SOLUTION	Low level radioactive aqueous mixed waste transferred from Tank 50H.

1.0 USE AND APPLICATION

1.3 Operating Modes, Logical Connectors, Completion Times, and Frequency Notations

Since there are no active components credited in Chapter 3, there are no controls other than ACs required for the Saltstone Facility. Therefore, Operating Modes have not been defined and the sections of the TSR explaining/defining Logical Connectors, Completion Times, and Frequency Notations are not included.

Section 2

Safety Limits

2.0 SAFETY LIMITS

2.1 Safety Limits

As defined in 10 CFR 830, SLs are limits on process variables associated with those safety class physical barriers, generally passive, that are necessary for the intended FACILITY function and that are required to guard against the uncontrolled release of radioactive material. The DSA did not determine any single limit that, if exceeded, could directly cause the failure of a barrier that prevents the release of radioactive or hazardous material. Therefore, no SLs are required.

Section 3/4
Operational Limits
and Surveillance Requirements

3.0/4.0 OPERATIONAL LIMITS AND SURVEILLANCE REQUIREMENTS

3.0/4.0 Operational Limits and Surveillance Requirements

3.0 LCSs are settings on safety systems that control process variables to prevent exceeding Safety Limits (SLs). Since no SLs were identified for inclusion in the TSR, no LCSs are required.

LCOs are limits established at the lowest functional capability or performance level of equipment required for safe operation of the FACILITY. Application of the TSR selection criteria and methodology, which are based on 10 CFR 830, resulted in no systems, components, or parameters being identified that require LCOs.

4.0 SRs are requirements under a particular LCO that relate to testing, calibration, or inspection of equipment or conditions to ensure that the necessary quality of systems and components is maintained and that FACILITY operations comply with the LCO. Since no LCOs were identified, no SRs are necessary.

Section 5

Administrative Controls

5.0 ADMINISTRATIVE CONTROLS

5.1 Responsibility

5.1.1 FACILITY Manager

The Facility Manager shall be responsible for the overall safe operation of the FACILITY and shall have control over those activities necessary for safe operation of the FACILITY. The Facility Manager shall delegate, in writing, the succession of responsibility during any absence.

5.1.2 Shift Manager

The Shift Manager shall be responsible for the FACILITY command function. As part of this command function, the Shift Manager shall ensure that the operation of the FACILITY is in accordance with approved TSRs.

5.0 ADMINISTRATIVE CONTROLS

5.2 Organization

5.2.1 Organization

a. Lines of authority, responsibility, and communication shall be established for the highest management levels, through intermediate levels, down to and including all operating organization positions.

b. Personnel who train the operating staff, carry out radiological control, or perform Quality Assurance (QA) functions may report to the Facility Manager; however, they shall have sufficient organizational freedom to ensure their independence from operating pressures.

5.2.2 FACILITY Staff

The FACILITY staff organization shall be as follows:

a. At least one qualified Shift Manager shall be available in the FACILITY during operation. FACILITY operation shall be performed under the cognizance of a qualified Shift Manager. Operation of the FACILITY shall be performed by qualified operators according to written procedures.

   FACILITY operation is defined as any one of the following conditions existing:

   1) Transferring of SALT SOLUTION into or out of the Salt Feed Tank.

   2) Production and transfer of saltstone grout from the Process Building to a saltstone vault through the grout transfer line.

b. The FACILITY Manager shall assign on-call support personnel as needed.

c. Personnel who perform TSR functions (e.g., operators and personnel involved in FACILITY operation) shall have their maximum number of working hours and maximum number of consecutive days on duty limited in accordance with administrative procedures.

5.0 ADMINISTRATIVE CONTROLS

5.3 Staff Qualifications and Training

5.3.1 Qualification

A program shall be established to ensure that identified FACILITY staff meet established qualification requirements for their positions. This program shall adhere to qualification requirements established in accordance with applicable DOE regulations.

5.3.2 Training

An initial training and continuing training program for the identified FACILITY staff shall be established and maintained. This program shall adhere to training requirements established in accordance with applicable DOE regulations.

5.0 ADMINISTRATIVE CONTROLS

5.4 Reviews and Assessments

5.4.1 Facility Operations Safety Committee

The Facility Operations Safety Committee (FOSC) advises the Facility Manager on matters affecting the operation of the FACILITY and associated activities that affect safety. The FOSC functions and responsibilities are established according to approved procedures.

5.4.2 WSRC Independent Assessment

An Independent Assessment of FACILITY activities and programs affecting nuclear safety shall be performed independent of the FACILITY staff. This independent assessment, as conducted by the Facility Evaluation Board program, should provide for the integration of the reviews and audits into a cohesive program to provide senior level management with an assessment of FACILITY operation and recommended actions to improve nuclear safety. The assessment should sample applicable functional areas to assess level of performance, assure adherence to applicable DOE directives and regulatory requirements, and evaluate the adequacy of the ongoing self-assessment program.

5.4.3 Self-Assessments

FACILITY self-assessments shall be conducted by various levels of the line organization who have responsibility for the functional area, process, or activity being assessed. These assessments must be conducted in accordance with approved procedures/guidelines and must ensure adherence to regulatory, operational, and administrative requirements.

5.4.4 Unreviewed Safety Question Process

Unreviewed Safety Question (USQ) process shall be:

a. Performed on proposed activities (including temporary modifications), reviewed, approved and documented in accordance with an approved procedure.

NOTE - Process/facility design features and administrative features that prevent or mitigate all postulated events are outlined in Tables 3.6-9 and 3.6-10 of Chapter 3. The Tables and associated control features are provided for information only, since the consequences of the events in the Tables do not merit SC, SS, or DSA Non-SC/SS DID controls. Since no credit has been taken for controls identified in the Tables, except the commitment to the WAC and the CSTF Transfer Control Program, which are specifically addressed as TSR level SS controls, modifications that impact the controls in the Tables are not considered to be “changes to the facility or procedures as described in the DSA” and will not result in a positive Unreviewed Safety Question (USQ) screen solely due to the presence of these controls in the Tables.

b. Approved by DOE prior to implementation of the proposed activity when a positive USQ is involved.

5.0 ADMINISTRATIVE CONTROLS

5.5 TSR Control

5.5.1 Changes to the TSR

Changes to the TSR shall be prepared with a submittal package including a description of the revision, justification for the change and supporting analysis. Changes to the TSR shall be independently reviewed and approved by WSRC management. Changes to the TSR shall be approved by DOE prior to incorporation of the TSR change.

5.0 ADMINISTRATIVE CONTROLS

5.6 Procedures and Programs

5.6.1 Procedures

5.6.1.1 Scope

Written procedures shall be established, implemented, and maintained covering the following:

a. Operational activities (including abnormal procedures).
b. Maintenance activities (including corrective and preventive maintenance).
c. Administrative aspects of FACILITY operation.
d. Programs specified in Section 5.6.2.

5.6.1.2 Review, Revision, and Approval

Procedures and revisions thereto, shall be reviewed and approved in accordance with approved administrative procedures prior to implementation, and reviewed periodically as set forth in administrative procedures.

5.6.1.3 Temporary Changes

Temporary changes to procedures may be made provided the change is documented and reviewed in accordance with approved administrative procedures.

5.6.2 Programs

The following programs shall be established, implemented, and maintained. Site level programs that satisfy the FACILITY program requirements may be used instead of developing FACILITY level programs.

5.6.2.1 Waste Acceptance Criteria Program

The Waste Acceptance Criteria (WAC) Program shall ensure that the composition of waste streams received into the FACILITY are within analyzed radionuclide and chemical concentration limits specified in the DSA. Waste streams not bounded by the analyzed assumptions shall not be accepted unless a USQ review has been performed and approved. Ensuring that the composition is within analyzed limits ensures that the FACILITY is maintained as a Hazard Category 3 facility and that potential consequences are within the DSA bounding analysis. Radionuclide concentrations are within analyzed limits provided the overall dose factors (in rem/gal) to the maximally exposed offsite individual , the co-located worker, and the facility worker are protected. The Saltstone WAC program shall require independent verification, performed by Saltstone Engineering, to ensure any waste transfer meets the Saltstone WAC.

5.6.2.2 Inadvertent Transfers from Tank 50H

Programmatic controls shall be established to ensure that inadvertent transfers, including a siphon, from Tank 50H are prevented. These controls shall ensure compliance with the CST Transfer Control program. These controls are in effect at CST to protect the assumed maximum material at risk of 15,000 gallons.

5.6.2.3 Radiological Protection Program

Procedures for personnel radiological protection shall be prepared consistent with DOE requirements and shall be approved, maintained, and adhered to for all operations involving personnel radiation exposure. The radiological protection program shall ensure that the radiation exposure of onsite individuals is maintained within applicable DOE limits and is As Low As Reasonably Achievable. The program shall ensure that individual and collective radiation exposures are minimized.

5.6.2.4 Fire Protection Program

A fire protection program shall be established to minimize threats to the public health or welfare resulting from a fire and undue hazards to site personnel from a fire.

The fire protection program shall address Fire Prevention, to include control of combustibles and combustible loading within and around the FACILITY, and Fire Control.

5.6.2.5 Quality Assurance Program

The FACILITY QA program, through the site QA program, shall:

a. Support independent assessment, verification, and inspection requirements to ensure compliance with the QA program.

b. Provide for a graded approach to the application of QA requirements throughout the life of the FACILITY.

5.6.2.6 Environmental Compliance Program

The site environmental compliance program shall comply with federal and state environmental regulations. The FACILITY shall follow site and FACILITY procedures governing the applicable environmental regulations.

5.6.2.7 Industrial Hygiene Program

The industrial hygiene program shall serve to maintain employee exposure to chemical and biological hazards within safe levels. The FACILITY shall follow site and FACILITY procedures governing the applicable Industrial Hygiene regulations.

5.0 ADMINISTRATIVE CONTROLS

5.7 Reporting Requirements

5.7.1 General Requirements

Written reports and oral notifications shall be submitted to DOE in accordance with DOE regulations regarding reporting requirements. These reports and notifications shall be prepared, reviewed and approved in accordance with approved procedures.

5.7.2 TSR Violations

Since the TSR does not include SLs, LCSs, LCOs or SRs, a TSR violation occurs if there is repeated neglect for the observance of ACs or a non-compliance having the potential for serious consequences. TSR violations require the following actions:

- Stop receiving and processing SALT SOLUTION.
- Notify DOE of the violation.

5.7.3 Conditions Outside TSR

In an emergency, if a situation develops that is not addressed by the TSR, site personnel are expected to use their training and expertise to take actions to correct or mitigate the situation. Also, site personnel may take actions that depart from a requirement in the TSRs provided that:

a. an emergency situation exists;

b. these actions are needed immediately to protect the worker, the public or the environment; and

c. no action consistent with the TSR can provide adequate or equivalent protection.

A Shift Manager must approve such action, as a minimum. If emergency action is taken, both a verbal notification shall be made to the responsible Head of the Field Element, and a written report shall be made to the Program Secretarial Officer within 24 hours.

5.0 ADMINISTRATIVE CONTROLS

5.8 Record Retention

The following records shall be retained for the period specified by the WSRC Record Retention Schedule:

a. Records of FACILITY operation.

b. Records of principal maintenance activities, inspections, repairs, and replacements of principal items of equipment related to FACILITY safety.

c. Records of reportable events and occurrences.

d. Records of changes made to procedures.

e. Records and drawing changes reflecting FACILITY design modifications made to systems and equipment described in the DSA.

f. Records of radiation exposure for all individuals entering Radiological Buffer Areas.

g. Records of FACILITY tests and experiments.

h. Records of gaseous and liquid radioactive material released to the environment

j. Records of training and qualification for current members of the FACILITY operations staff.

i. Records of USQ Evaluations performed for changes or tests and experiments.

j. Results of reviews and assessments.

Section 6

Design Features

6.0 DESIGN FEATURES

6.1 Design Features

This section identifies and describes the passive design features and passive structures, systems and components (SSCs) not specifically required to have SLs, LCSs, or LCOs as required by 10 CFR 830.

The DSA did not identify any passive design features or passive SSCs which would require inclusion in the TSRs.

Appendix A

Bases

B2/3/4.0 BASES

B2.0, B3.0, B4.0	The Bases Section is not required, since there were no SLs, LCSs, LCOs, or SRs identified. The TSR derivation methodology, criteria, and conclusions are contained in Chapter 5 of the Saltstone Facility DSA.